

WinFS

WinFS Overview: Customer View and Roadmap

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Agenda

- What is WinFS *today*?
 - Genesis
 - Vision
 - Longhorn is V1
- How WinFS is Seen
 - Shell
 - Office Partnerships
 - WinFS for ISVs
- Status and Futures
 - 2003 Progress
 - 2004 Goals
 - Futures
- Questions

There are 7 more WinFS ECS talks coming up

Genesis: End-Users

- Find
 - Better search capabilities will have direct impact on productivity
 - Knowledge workers spend 15-25% of time searching (AIIM)
 - KW's spend 2.5 hours per day searching for information (IDC)
 - “It should be *my* data”
 - The Information users create is theirs, not an application's
 - Data should be easily sharable across applications
 - Information should be organized more flexibly
- Relate
 - Users think about information, not file path names
 - End-users being able to relate and act on their data opens new productivity advances
- Act
 - Data overload is a serious and worsening problem
 - Anywhere, anytime, anyplace
 - Offline



Genesis: Data on the Desktop

- Developers want more from the filesystem
 - Existing file types can participate in a new data-driven user world
 - Current applications just continue to work on Longhorn without changes
- Developers trying to get at common data primitives
 - New things in the OS to integrate with (contacts, calendar, documents, annotations, etc.)
 - New Windows types are extensible
- Developers need a real data platform
 - A data model to build on supported by a real database
 - Windows Explorer extensions to allow end-users access to branded data

Genesis: The Database Community

- RDBMS Market
 - Relational Model as Codd defined it is mostly complete
 - Major enterprise applications write to the lowest common denominator of SQL
 - They all are building common frameworks of schemas, an object model abstraction to the stored data, application logic, etc.
 - Database vendors now working to find ways to extend the relational model to get the application vendors
 - OR, XML, filesystem extensions, etc.
- WinFS
 - The most complete model yet conceived that comprehensively extends Relational
 - Data as structured, semi-structured, and opaque
 - Data Access as Objects, XML and Relational

WinFS Vision

WinFS is the active storage platform for organizing, searching and sharing all data

- WinFS is about extending and broadening the data platform beyond File and Relational systems, and is the store for all types of data
- WinFS begins to bridge the seams that exist today between standard relational and filesystem data programmability and management
- The future of WinFS and MS SQL continue to remove those seams

Longhorn is V1

- Focus on the end-user data
- Enable a new Shell experience that capitalizes on the productivity gains
- WinFS as the data pillar of the WinFX platform

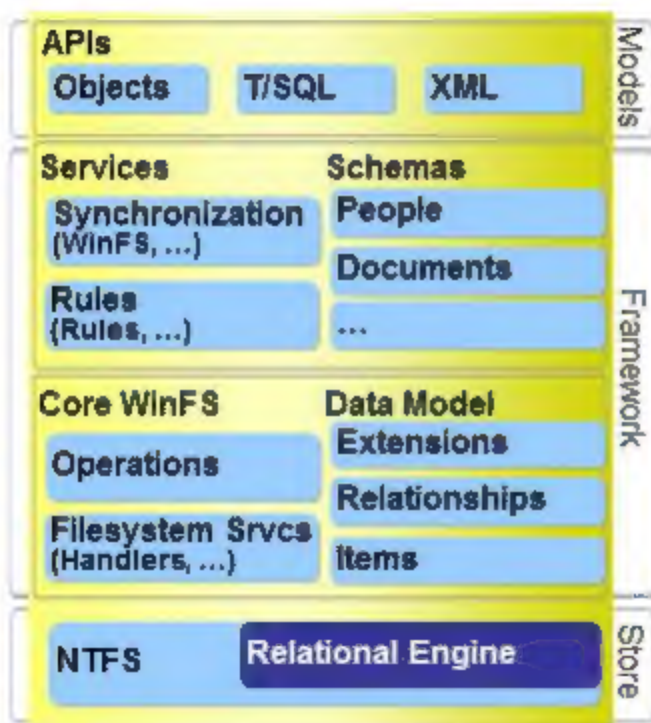
Not

- Replacement for a block/streams filesystem
- Replacement for the registry
- Replacement for all database requirements

Longhorn

- Industry platform for the next wave
 - A next-gen desktop OS platform, new applications and services
 - DOS → Win16 → Win32 → LAPI
 - Built in next-gen framework (managed code)
- Provide new innovation opportunities to ISVs
 - Presentation (Avalon, Aero)
 - Communication (Indigo)
 - Storage (WinFS, Aero)
- It's about the industry
 - Innovation
 - Productivity

WinFS



- **Integrated Storage Platform**
File stream + relational + XML
- **Structured "Item" Store**
Files/Folders → Items/Relationships
- **New Windows Types**
"Everyday info" schemas + ISV extensions
- **Multi-master Sync**
WinFS-to-WinFS + Sync Adapters
- **Active Data**
Notifications & Rules
- **It's Still a File System**
FS Semantics, Security, Manageability, Backwards Compatible with Win32 (file backed items)

A New Windows Explorer

- Shell is making an enormous investment into a new user model with capabilities that are not possible today
- Property driven navigation, relationship discovery, more flexible organization, finding
- Folder model continues to be there for legacy stores

Shell Screenshot 1



20

Name Online status Job title Phone IM address



Raquel Mello
trusted person contact

206-555-1234
rmello@schweg.com work
raquelmello@hotmail.com



Sonja's team
group contact

Don Hall
Raquel Mello
Rui Liu
Jyothi Pai
Bradley Beck
Candy Spoon

More



Michael Raheem
inactive
trusted person contact

206-555-1234
E-mail mikeraaah@msn.com home



Contoso Ltd
company contact

415-555-1234
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contoso-support@hotmail.com



Kim Ralls
trusted person contact

Phone 415-555-1234 home
ceesvandok@aol.com
Ceesvandok



Sean

510-555-1234 home
seanh2000@msn.net

Any contact

Recent contacts

Personal contacts

Family & friends

People nearby

More

Internet types

Internet search

Phone

Address

More

Shell Screenshot 3

Office

- **Across Office**
 - Thinking hard about the nature of documents
 - Working on design of a “Office Longhorn” release
- **Outlook**
 - Mail, Contacts, Calendar, Tasks are all end-user data Items
 - Shell integration, new data model, leverage of other types open new doors for Outlook
- **Access**
 - Ability to integrate with Windows Types
 - High-end knowledge workers can create custom solutions that benefit from Shell integration, synchronization, rules, etc.
- **Sharepoint**
 - Data managed by Sites and by local system a seamless experience for end-users
 - Not until Longhorn Server

Status: Shell

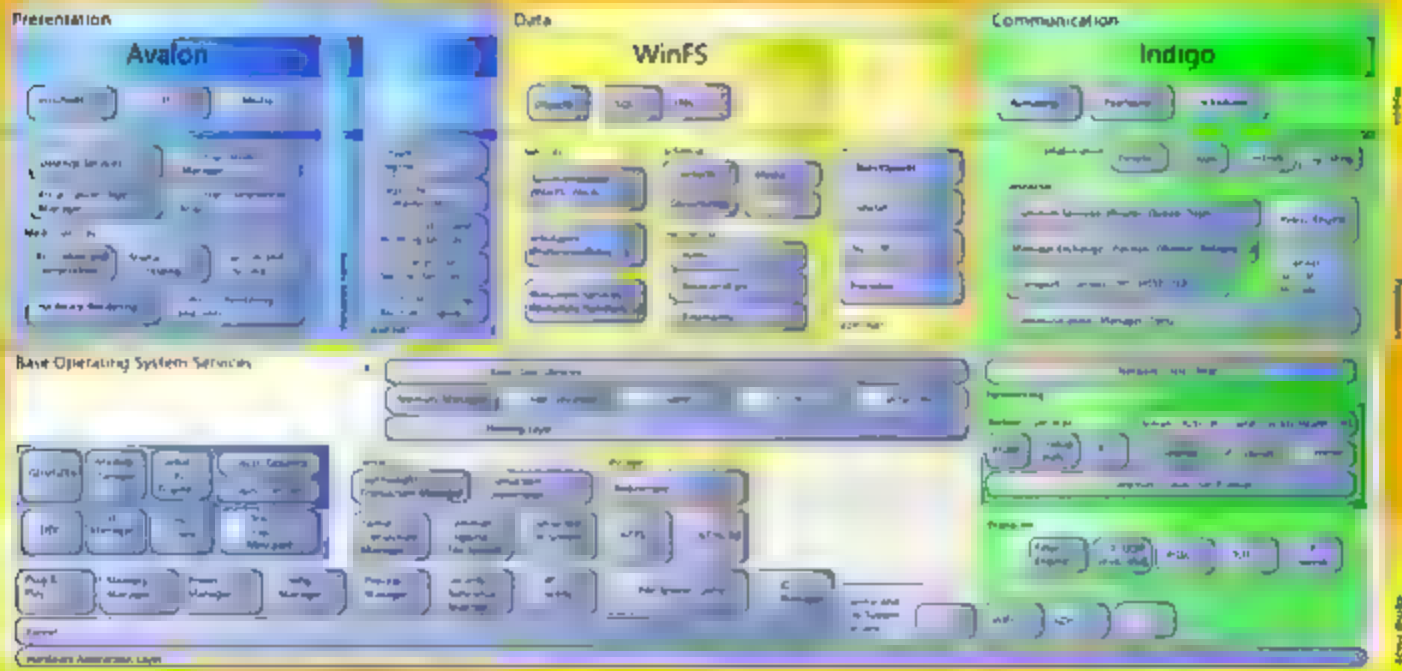
- Still innovating
 - Shell design still evolving
- Deeply married
 - Collaborative, productive
 - Could be better organized
 - Solid overall communication
- Key contributors
 - ChrisG, WSmith, NatBa, GSierra
 - Lots of people.. Code is being written!
- Go install a Lab06 build
- Open issues
 - Tracked by Shell In Windows UX Worklist PS database (since M4): 84 resolved, 53 open
 - Major:
 - Conceptual model (e.g. sharing)
 - Performance
 - "App views"
 - Promotion/demotion
 - Schedule (e.g. Beta 1 goals/scenarios)
- Significant events
 - Complete: Shell now uses WinFS API for core database interfaces

Status: Outlook

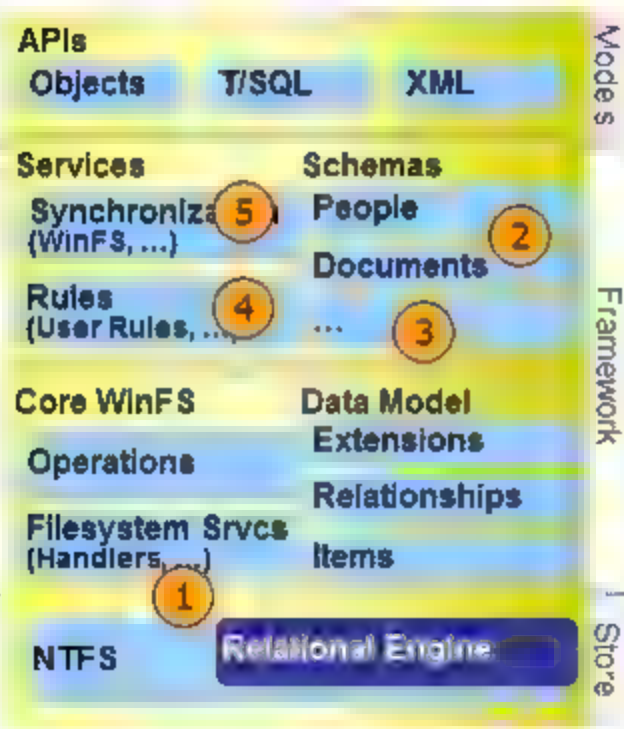
- Outlook is highly engaged
 - WillK, MarcoO, AaronH, RicG, DanielKo, AonB, and more
- Design Issues
 - In PS, tracked 44 tickets, 18 currently open, most in working groups now
 - Couple DCR's in WinFS eng plan now
 - Retired many big picture issues specific to WinFS
 - Remaining list affected by Windows Explorer design work
- Outlook is writing code against current WinFS builds.
 - mdbvu read-only on mail messages is working on dev workstations in building 18
 - Considering changing POR eng plan to work more breadth first
- Drilling
 - User security (viruses attacking contact lists)
 - Application Interoperability
 - What's in Outlook views?
 - Outlook data in other views
 - User data boundaries
 - Schema versioning
 - Remote access and synchronization
 - Identify key scenarios
 - Programmability Story
 - Legacy and the new WinFS model
 - platform API spec
 - Real application performance

WinFS for ISVs: Data Pillar of WinFX

Longhorn Architecture



Developer Surface Area



- 1 Build Metadata Handlers for existing files
- 2 Write to and Extend Windows types
 - Includes application log c
- 3 Build your own Types
 - Data types
 - Application log c and methods
- 4 Build on Rules
 - Data events, conditions, actions
- 5 Leverage Synchronization
 - Synchronization adaptors
- 6 Integration with Longhorn Shell

WinFS Status

- 2003 Progress
 - B (UDT) check-in did happen in December
 - This is the “.8” implementation we worked on all last year
 - Shell is now on WinFS APIs in Lab06
 - Outlook is moving ahead, has some code working
 - 2003 Goal to reach closure on major decisions
 - Goal met modulo a couple new things that popped-up
- 2004 Goals
 - Longhorn Milestone 7.2 (completes March)
 - Work on performance
 - Longhorn Milestone 8 (completes end of Summer)
 - Complete platform features for Beta1
 - Work on basics
 - Meet Shell requirements

Many Decisions

- Many closed over last year, examples:
 - Custom Properties (PS#16521)
 - WinFS on Windows Server 2003 (PS#16539)
 - Proxy Items (PS#16532)
 - State Separation Support (PS#16533)
 - XML Support (PS#16548)
 - CSC/WSS synchronization alignment (PS#20289)
 - SOAP (PS#17615)
 - Distributed Query (PS#16517)
 - Application Logic (PS#16535)
 - Security Model (PS#16526)
 - Encryption Support (PS#16527)
 - DRM Support (PS#16537)
 - Schema Versioning (PS#16536)
- Couple Significant Ongoing
 - MBF/ObjectSpaces/WinFS Alignment (PS#16522)
 - Design for WinFS/SQL Alignment (PS#16552)

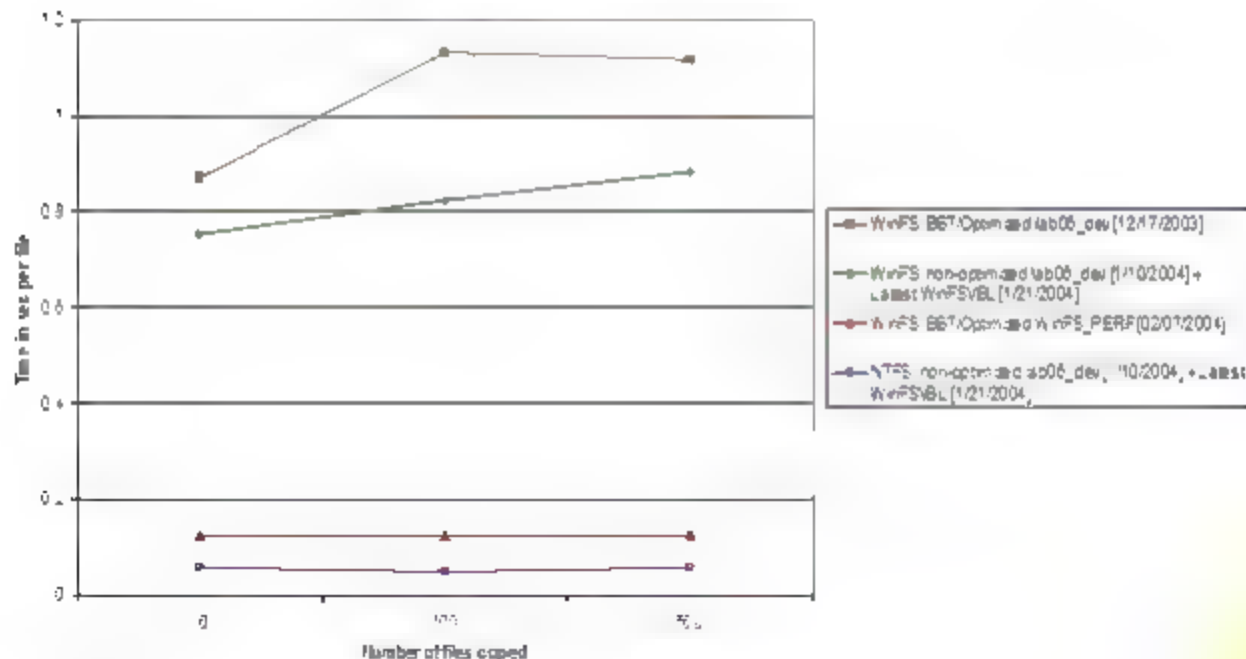
Performance

- Significant performance issues with PDC WinFS architecture
 - PDC WinFS architecture
- Major performance issues with system just completed
 - Lots of performance issues
- January 2005 performance issues
 - Code review
 - "Early" performance issues
 - Resulted in confidence that performance will be there



Performance Progress

Copy Photos using Shell Copy
{10*100:500 files, 100 KB each file}

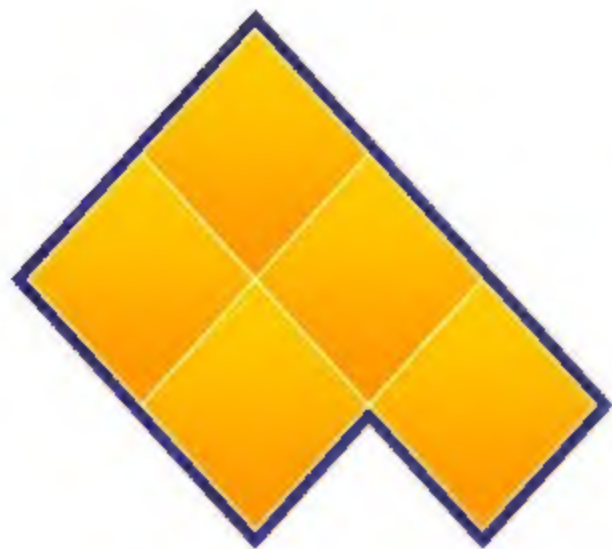


The Future: A Complete Data Platform

- Longhorn Desktop
 - WinFS in Longhorn will capture Everyday Information for Users
- Windows Server
 - Support Windows client scenarios as the new fileserver
 - Improved file system for internal Windows components use
 - Enable Longhorn applications to run locally for desktop use
 - Non-goal of replacing traditional DB servers
- MS SQL Yukon+1
 - Is the complete data platform (all database features)
 - Can create Tables and Items in any database
 - Significant step toward bridging WinFS and relational data together

Making It Happen

- Do something for the Longhorn Wave
 - How is your product going to be better with Longhorn, Office12, Longhorn Live, Longhorn Server?
- Don't suffocate us
 - We can die under the weight of too many requirements
 - That said, it's a platform - give us some time, then build on what it is, not what you wish it was
- Leave design-by-rumors to the big, dumb corporations
 - Come to the source, come talk to me



Thank you!

WinFS

Questions?

Upcoming WinFS ECS Talks

Programming and Data Model

API

Architecture and Implementation

Schema

Rules Engine

File System Integration

Sync

Anil Nori

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